

# PATENT COOPERATION TREATY

JWA

From the INTERNATIONAL SEARCHING AUTHORITY

To:  
JOHN M. AUGUSTYN  
LEYDIG, VOIT & MAYER, LTD.  
TWO PRUDENTIAL PLAZA, SUITE 4900  
180 NORTH STETSON  
CHICAGO, IL 60601-6780

## PCT

### NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 201257	Date of Mailing (day/month/year) <b>18 OCT 2000</b>
International application No. PCT/US00/40117	International filing date (day/month/year) 06 June 2000 (06.06.2000)
Applicant THE GLAD PRODUCTS COMPANY	

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.  
**Filing of amendments and statement under Article 19:**  
 The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompany sheet.

**Where?** Directly to the International Bureau of WIPO  
 34, chemin des Colombettes  
 1211 Geneva 20, Switzerland  
 Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

LEYDIG, VOIT & MAYER  
RECEIVED

OCT 24 2000

Kryader  
Date 12-18-00  
PAT/IMB's

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.
3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

RJS

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau.  
 If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90 bis 1 and 90 bis 3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the ISA/US  
 Commissioner of Patents and Trademarks  
 Box PCT  
 Washington, D.C. 20231  
 Facsimile No. (703)305-3230

Authorized officer  
 James R. Brittain

Telephone No. 703-308-1113

# PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:  
JOHN M. AUGUSTYN  
LEYDIG, VOIT & MAYER, LTD.  
TWO PRUDENTIAL PLAZA, SUITE 4900  
180 NORTH STETSON  
CHICAGO, IL 60601-6780

## PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT  
OR THE DECLARATION

(PCT Rule 44.1)

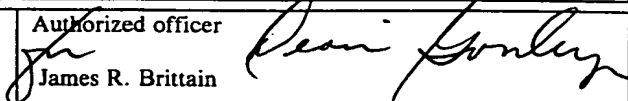
Applicant's or agent's file reference 201257		Date of Mailing (day/month/year) <b>18 OCT 2000</b>
International application No. PCT/US00/40117		International filing date (day/month/year) 06 June 2000 (06.06.2000)
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When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompany sheet.  
  
Where? Directly to the International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland  
Facsimile No.: (41-22) 740.14.35  
  
For more detailed instructions, see the notes on the accompanying sheet.

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☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

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If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90 bis 1 and 90 bis 3, respectively, before the completion of the technical preparations for international publication.  
  
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Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer  James R. Brittain Telephone No. 703-308-1113
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# PCT REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.	10/049319
International Filing Date	
Name of receiving Office and "PCT International Application"	
Applicant's or agent's file reference (if desired) (12 characters maximum) 201257	

<b>Box No. I TITLE OF INVENTION</b>	
CLOSURE DEVICE	
<b>Box No. II APPLICANT</b>	
Name and Address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) THE GLAD PRODUCTS COMPANY 1221 Broadway Oakland, California 94612 US	<input type="checkbox"/> This person is also inventor. Telephone No. (510) 271-7000 Facsimile No. (510) 271-1652 Teleprinter No.
State (that is, country) of nationality: US	State (that is, country) of residence: US
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input checked="" type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<b>Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)</b>	
Name and Address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) SAVICKI, Alan F., Sr. 577 Beaconsfield Avenue Naperville, Illinois 60565 US	This person is: <input type="checkbox"/> applicant only <input checked="" type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only (If this check-box is marked, do not fill in below.)
State (that is, country) of nationality: US	State (that is, country) of residence: US
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<input type="checkbox"/> Further applicants and/or (further) inventors are indicated on a continuation sheet.	
<b>Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE</b>	
The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: <input checked="" type="checkbox"/> agent <input type="checkbox"/> common representative	
Name and Address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) AUGUSTYN, John M. LEYDIG, VOIT & MAYER, LTD. Two Prudential Plaza, Suite 4900 180 North Stetson Chicago, Illinois 60601-6780 US	Telephone No. (312) 616-5600 Facsimile No. (312) 616-5700 Teleprinter No.
<input type="checkbox"/> Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.	

**Box No. V DESIGNATION OF STATES**

The following designations are hereby made under Rule 4.9(a) (*mark the applicable check-boxes; at least one must be marked*):

**Regional Patent**

- ☒ **AP** **ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA** **Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP** **European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA** **OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (*if other kind of protection or treatment desired, specify on the dotted line*) .....

**National Patent (*if other kind of protection or treatment desired, specify on dotted line*):**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> <b>AE</b> United Arab Emirates                  | <input checked="" type="checkbox"/> <b>LK</b> Sri Lanka                                 |
| <input checked="" type="checkbox"/> <b>AL</b> Albania                               | <input checked="" type="checkbox"/> <b>LR</b> Liberia                                   |
| <input checked="" type="checkbox"/> <b>AG</b> Antigua and Barbuda                   | <input checked="" type="checkbox"/> <b>LS</b> Lesotho                                   |
| <input checked="" type="checkbox"/> <b>AM</b> Armenia                               | <input checked="" type="checkbox"/> <b>LT</b> Lithuania                                 |
| <input checked="" type="checkbox"/> <b>AT</b> Austria                               | <input checked="" type="checkbox"/> <b>LU</b> Luxembourg                                |
| <input checked="" type="checkbox"/> <b>AU</b> Australia                             | <input checked="" type="checkbox"/> <b>LV</b> Latvia                                    |
| <input checked="" type="checkbox"/> <b>AZ</b> Azerbaijan                            | <input checked="" type="checkbox"/> <b>MA</b> Morocco                                   |
| <input checked="" type="checkbox"/> <b>BA</b> Bosnia and Herzegovina                | <input checked="" type="checkbox"/> <b>MD</b> Republic of Moldova                       |
| <input checked="" type="checkbox"/> <b>BB</b> Barbados                              | <input checked="" type="checkbox"/> <b>MG</b> Madagascar                                |
| <input checked="" type="checkbox"/> <b>BG</b> Bulgaria                              | <input checked="" type="checkbox"/> <b>MK</b> The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> <b>BR</b> Brazil                                | <input checked="" type="checkbox"/> <b>MN</b> Mongolia                                  |
| <input checked="" type="checkbox"/> <b>BY</b> Belarus                               | <input checked="" type="checkbox"/> <b>MW</b> Malawi                                    |
| <input checked="" type="checkbox"/> <b>BZ</b> Belize                                | <input checked="" type="checkbox"/> <b>MX</b> México                                    |
| <input checked="" type="checkbox"/> <b>CA</b> Canada                                | <input checked="" type="checkbox"/> <b>MZ</b> Mozambique                                |
| <input checked="" type="checkbox"/> <b>CH and LI</b> Switzerland and Liechtenstein  | <input checked="" type="checkbox"/> <b>NO</b> Norway                                    |
| <input checked="" type="checkbox"/> <b>CN</b> China                                 | <input checked="" type="checkbox"/> <b>NZ</b> New Zealand                               |
| <input checked="" type="checkbox"/> <b>CR</b> Costa Rica                            | <input checked="" type="checkbox"/> <b>PL</b> Poland                                    |
| <input checked="" type="checkbox"/> <b>CU</b> Cuba                                  | <input checked="" type="checkbox"/> <b>PT</b> Portugal                                  |
| <input checked="" type="checkbox"/> <b>CZ</b> Czech Republic                        | <input checked="" type="checkbox"/> <b>RO</b> Romania                                   |
| <input checked="" type="checkbox"/> <b>DE</b> Germany                               | <input checked="" type="checkbox"/> <b>RU</b> Russian Federation                        |
| <input checked="" type="checkbox"/> <b>DK</b> Denmark                               | <input checked="" type="checkbox"/> <b>SD</b> Sudan                                     |
| <input checked="" type="checkbox"/> <b>DM</b> Dominica                              | <input checked="" type="checkbox"/> <b>SE</b> Sweden                                    |
| <input checked="" type="checkbox"/> <b>DZ</b> Algeria                               | <input checked="" type="checkbox"/> <b>SG</b> Singapore                                 |
| <input checked="" type="checkbox"/> <b>EE</b> Estonia                               | <input checked="" type="checkbox"/> <b>SI</b> Slovenia                                  |
| <input checked="" type="checkbox"/> <b>ES</b> Spain                                 | <input checked="" type="checkbox"/> <b>SK</b> Slovakia                                  |
| <input checked="" type="checkbox"/> <b>FI</b> Finland                               | <input checked="" type="checkbox"/> <b>SL</b> Sierra Leone                              |
| <input checked="" type="checkbox"/> <b>GB</b> United Kingdom                        | <input checked="" type="checkbox"/> <b>TJ</b> Tajikistan                                |
| <input checked="" type="checkbox"/> <b>GD</b> Grenada                               | <input checked="" type="checkbox"/> <b>TM</b> Turkmenistan                              |
| <input checked="" type="checkbox"/> <b>GE</b> Georgia                               | <input checked="" type="checkbox"/> <b>TR</b> Turkey                                    |
| <input checked="" type="checkbox"/> <b>GH</b> Ghana                                 | <input checked="" type="checkbox"/> <b>TT</b> Trinidad and Tobago                       |
| <input checked="" type="checkbox"/> <b>GM</b> Gambia                                | <input checked="" type="checkbox"/> <b>TZ</b> United Republic of Tanzania               |
| <input checked="" type="checkbox"/> <b>HR</b> Croatia                               | <input checked="" type="checkbox"/> <b>UA</b> Ukraine                                   |
| <input checked="" type="checkbox"/> <b>HU</b> Hungary                               | <input checked="" type="checkbox"/> <b>UG</b> Uganda                                    |
| <input checked="" type="checkbox"/> <b>ID</b> Indonesia                             | <input checked="" type="checkbox"/> <b>US</b> United States of America                  |
| <input checked="" type="checkbox"/> <b>IL</b> Israel                                | <input checked="" type="checkbox"/> <b>UZ</b> Uzbekistan                                |
| <input checked="" type="checkbox"/> <b>IN</b> India                                 | <input checked="" type="checkbox"/> <b>VN</b> Viet Nam                                  |
| <input checked="" type="checkbox"/> <b>IS</b> Iceland                               | <input checked="" type="checkbox"/> <b>YU</b> Yugoslavia                                |
| <input checked="" type="checkbox"/> <b>JP</b> Japan                                 | <input checked="" type="checkbox"/> <b>ZA</b> South Africa                              |
| <input checked="" type="checkbox"/> <b>KE</b> Kenya                                 | <input checked="" type="checkbox"/> <b>ZW</b> Zimbabwe                                  |
| <input checked="" type="checkbox"/> <b>KG</b> Kyrgyzstan                            |   |
| <input checked="" type="checkbox"/> <b>KP</b> Democratic People's Republic of Korea |   |
| <input checked="" type="checkbox"/> <b>KR</b> Republic of Korea                     |   |
| <input checked="" type="checkbox"/> <b>KZ</b> Kazakhstan                            |   |
| <input checked="" type="checkbox"/> <b>LC</b> Saint Lucia                           |   |

Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet:

- ☐ .....
- ☐ .....

**Precautionary Designation Statement:** In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (*Confirmation (including fees) must reach the receiving Office within the 15-month time limit.*)

**Supplemental Box**
*If the Supplemental Box is not used, this sheet need not be included in the request.*

1. If, in any of the boxes, the space is insufficient to furnish all the information: in such case write "Continuation of Box No. ..." (indicate the number of the Box) and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient, in particular:

- (i) if more than two persons are involved as applicants and/or inventors and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III. The country of the address indicated in this box is the applicant's State (that is, country) of residence if no State of residence is indicated below;
- (ii) if, in Box No. II or in any of the sub-boxes of Box No. III, the indication "the States indicated in the Supplemental Box" is checked: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is applicant;
- (iii) if, in Box No. II or in any of the sub-boxes of Box No. III, the inventor or the inventor/applicant is not inventor for the purposes of all designated States or for the purposes of the United States of America: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor(s) and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is inventor;
- (iv) if, in addition to the agent(s) indicated in Box No. IV, there are further agents: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV;
- (v) if, in Box No. V, the name of any State (or OAPI) is accompanied by the indication "patent of addition," or "certificate of addition," or, in, in Box No. V, the name of the United States of America is accompanied by an indication "continuation" or "continuation-in-part": in such case, write "Continuation of Box No. V" and the name of each State (or OAPI), and after the name of each such State (or OAPI), the number of the parent title or parent application and the date of grant of the parent title or filing of the parent application;
- (vi) if, in Box No. VI, there are more than three earlier applications whose priority is claimed: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI;
- (vii) if, in Box No. VI, the earlier application is an APIPO application: in such case, write "Continuation of Box No. VI", specify the number of the item corresponding to that earlier application and indicate at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed.

2. If, with regard to the precautionary designation statement contained in Box No. V, the applicant wishes to exclude any State(s) from the scope of that statement: in such case, write "Designation(s) excluded from precautionary designation statement" and indicate the name or two-letter code of each State so excluded.

3. If the applicant claims, in respect of any designated Office, the benefits of provisions of the national law concerning non-prejudicial disclosures or exceptions to lack of novelty: in such case, write "Statement concerning non-prejudicial disclosures or exceptions to lack of novelty" and furnish that statement below.

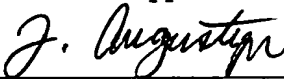
**Continuation of Box No. IV:**

SHEPPARD, Berton Scott  
MUSKAL, James B.  
SCHLEMMER, Dennis R.  
COONS, Gordon R.  
ROSENQUIST, John E.  
KOZAK, John W.  
OSLAKOVIC, Charles S.  
PHELPS, Mark E.  
HARTMANN, H. Michael  
GAGALA, Bruce M.  
MOTTIER, Charles H.  
KILYK, John, Jr.  
GREEN, Robert F.  
CONKLIN, John B.  
ZALEWA, James D.  
BELZ, John M.  
HESTERBERG, Brett A.  
WYAND, Jeffrey A.  
KORNICZKY, Paul J.

RUSCHAU, Pamela J.  
PETERSEN, Steven P.  
GRIFFITH, Christopher T.  
MUELLER, Wesley O.  
JAY, Jeremy M.  
BURGAN, Jeffrey B.  
THOMPSON, Eley O.  
JOY, Mark  
AIRAN, David M.  
BELUSH, Thomas A.  
HOOVER, Allen E.  
PILLAI, Xavier  
CHANG, Y. Kurt  
BAYS, Gregory C.  
LARCHER, Carol  
SKLAR, Steven H.  
HEFNER, M. Daniel

SPINA, Kenneth P.  
GUTMAN, Siegmund Y.  
HEINISCH, Andrew J.  
MAKEEVER, Jeffery J.  
HASAN, Salim A.  
WULFF, Richard A.  
PIPPINGER, Phillip M.  
LYNCH, Jamison E.  
VASILJEVIC, Vladan M.  
NATH, Rattan  
GOULD, Robert M.  
SMITH, Len S.  
WINGATE, Kevin L.  
SCHODIN, David J.  
KISSLING, Heather R.  
AHERN, Paul L.  
ANDERSON, Theodore W.  
SMITH, Noel I.

all of  
LEYDIG, VOIT & MAYER, LTD.  
Two Prudential Plaza, Suite 4900  
180 North Stetson  
Chicago, Illinois 60601-6780  
US  
(312) 616-5600 Telephone  
(312) 616-5700 Fax

<b>Box No. VI PRIORITY CLAIM</b>				
<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.				
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application:* regional Office	international application: receiving Office
item (1)				
item (2)				
item (3)				
<input type="checkbox"/> The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office for which for the purposes of the present international application is the receiving Office) identified above as item(s): * Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.				
<b>Box No. VII INTERNATIONAL SEARCHING AUTHORITY</b>				
<b>Choice of International Searching Authority (ISA)</b> (If two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used): ISA / US		<b>Request to use results of earlier search; reference to that search</b> (if an earlier search has been carried out or requested from the International Searching Authority): Date (day/month/year)      Number      Country (or regional Office)		
<b>Box No. VIII CHECK LIST; LANGUAGE OF FILING</b>				
This international application contains the following number of sheets: request : 4 description (excluding sequence listing part) : 13 claims : 4 abstract : 1 drawings : 8 sequence listing part of description : total number of sheets: 30		This international application is accompanied by the item(s) marked below: 1. <input checked="" type="checkbox"/> fee calculation sheet 2. <input type="checkbox"/> separate signed power of attorney 3. <input checked="" type="checkbox"/> copy of general power of attorney; reference number, if any: 4. <input type="checkbox"/> statement explaining lack of signature 5. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s): 6. <input type="checkbox"/> translation of international application into (language): 7. <input type="checkbox"/> separate indications concerning deposited microorganisms or other biological material 8. <input type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form 9. <input type="checkbox"/> other (specify):		
Figure of the drawings which should accompany the abstract:		Language of filing of the international application: English		
<b>Box No. IX SIGNATURE OF APPLICANT OR AGENT</b>				
Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request). <div style="text-align: center;">           LEYDIG, VOIT &amp; MAYER, LTD.            Agent for the Applicant(s)         </div> <div style="text-align: center;">           By:             John M. Augustyn         </div>				

For receiving Office use only

1. Date of actual receipt of the purported international application:	2. Drawings:  <input type="checkbox"/> received:  <input type="checkbox"/> not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority specified by applicant: ISA /	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.

For International Bureau use only

Date of receipt of the record copy by the International Bureau:
---

This sheet is not part of and does not count as a sheet of the international application.

# PCT

## FEE CALCULATION SHEET

### Annex to the Request

For receiving Office use only

<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Applicant's or agent's file reference                      201257</div> <div style="border: 1px solid black; padding: 5px;">Applicant THE GLAD PRODUCTS COMPANY et al.</div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">International Application No.</div> <div style="border: 1px solid black; padding: 5px;">Date stamp of the receiving Office</div>
<div><b>CALCULATION OF PRESCRIBED FEES</b></div> <div style="margin-top: 10px;">1. TRANSMITTAL FEE <span style="float: right;">\$240.00 <span style="border: 1px solid black; padding: 0 5px;">T</span></span></div> <div style="margin-top: 10px;">2. SEARCH FEE <span style="float: right;">\$700.00 <span style="border: 1px solid black; padding: 0 5px;">S</span></span> International Search to be carried out by <span style="float: right;">ISA/US</span> <small>(If two or more international Searching Authorities are competent in relation to the international application, indicate the name of the Authority which is chosen to carry out the international search.)</small></div> <div style="margin-top: 10px;">3. INTERNATIONAL FEE <b>Basic Fee</b> The international application contains <u>30</u> sheets. first 30 sheets <span style="float: right;">\$427.00 <span style="border: 1px solid black; padding: 0 5px;">b<sub>1</sub></span></span> <div style="display: flex; align-items: center; justify-content: center;"><div style="text-align: right;">0</div><div style="text-align: center;">x</div><div style="text-align: left;">\$10.00</div><div style="margin: 0 10px;">=</div><div style="text-align: right;">\$0.00 <span style="border: 1px solid black; padding: 0 5px;">b<sub>2</sub></span></div></div><div style="display: flex; justify-content: space-between; width: 100%;"><div>remaining sheets      additional amount</div><div></div></div><div style="margin-top: 5px;">Add amounts entered at b<sub>1</sub> and b<sub>2</sub> and enter total at B <span style="float: right;">\$427.00 <span style="border: 1px solid black; padding: 0 5px;">B</span></span></div><div style="margin-top: 10px;"><b>Designation Fees</b> The international application contains <u>87</u> designations. <div style="display: flex; align-items: center; justify-content: center;"><div style="text-align: right;">8</div><div style="text-align: center;">x</div><div style="text-align: left;">\$92.00</div><div style="margin: 0 10px;">=</div><div style="text-align: right;">\$736.00 <span style="border: 1px solid black; padding: 0 5px;">D</span></div></div><div style="display: flex; justify-content: space-between; width: 100%;"><div>number of designation fees payable (maximum 8)</div><div>amount of designation fee</div></div><div style="margin-top: 5px;">Add amounts at B and D and enter total amount at I <span style="float: right;">\$1,163.00 <span style="border: 1px solid black; padding: 0 5px;">I</span></span></div><div style="margin-top: 5px;"><small>(Applicants from certain states are entitled to a reduction of 75% of the international fee. Where the applicant is (or all applicants are) so entitled, the total to be entered at I is 25% of the sum of the amounts entered at B and D.)</small></div></div><div style="margin-top: 10px;">4. FEE FOR PRIORITY DOCUMENT (if applicable) <span style="float: right;">0 <span style="border: 1px solid black; padding: 0 5px;">P</span></span></div><div style="margin-top: 10px;">5. TOTAL FEES PAYABLE Add amounts entered at T, S, I and P, and enter total in the TOTAL box <div style="text-align: right; margin-top: 5px;">\$2,103.00 <span style="border: 1px solid black; padding: 2px 10px;">TOTAL</span></div></div></div>	
<div><input type="checkbox"/> The designation fees are not paid at this time.</div> <div style="margin-top: 10px;"><b>MODE OF PAYMENT</b><div style="display: flex; flex-wrap: wrap;"><div style="width: 33%;"><input type="checkbox"/> authorization to charge deposit account (see below)</div><div style="width: 33%;"><input type="checkbox"/> bank draft</div><div style="width: 33%;"><input type="checkbox"/> Coupons</div><div style="width: 33%;"><input checked="" type="checkbox"/> cheque</div><div style="width: 33%;"><input type="checkbox"/> cash</div><div style="width: 33%;"><input type="checkbox"/> other (specify):</div><div style="width: 33%;"><input type="checkbox"/> postal money order</div><div style="width: 33%;"><input type="checkbox"/> revenue stamps</div></div></div>	
<div><b>DEPOSIT ACCOUNT AUTHORIZATION</b> (this mode of payment may not be available at all receiving Offices)</div> <div style="margin-top: 10px;">The RO/ <u>US</u> <input type="checkbox"/> is hereby authorized to charge the total fees indicated above to my deposit account.</div> <div style="margin-top: 10px;"><input checked="" type="checkbox"/> (this box may be marked only if the conditions for deposit accounts of the receiving Office so permit) is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.</div> <div style="margin-top: 10px;"><input type="checkbox"/> is hereby authorized to charge the fee for preparation and transmittal of the priority document to the International Bureau of WIPO to my deposit account.</div> <div style="display: flex; justify-content: space-between; margin-top: 20px;"><div>12-1216 Deposit Account Number</div><div>06/06/2000 Date (day/month/year)</div><div> Signature</div></div>	

# PCT

## GENERAL POWER OF ATTORNEY

(for several international applications filed under the Patent Cooperation Treaty)

(PCT Rule 90.5)

**The undersigned person(s)**

(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

THE GLAD PRODUCTS COMPANY

1221 Broadway

Oakland, California 94612

hereby appoints (appoint) the following person as: ☒ agent ☐ common representative

**Name and address**

(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

SHEPPARD, Berton Scott; MUSKAL, James B; SCHLEMMER, Dennis R.; COONS, Gordon R.; ROSENQUIST, John E.; KOZAK, John W.; OSLAKOVIC, Charles S.; PHELPS, Mark E.; HARTMANN, H. Michael; GAGALA, Bruce M.; MOTTIER, Charles H.; KILYK, John, Jr.; GREEN, Robert F.; CONKLIN, John B.; ZALEWA, James D.; BELZ, John M.; HESTERBERG, Brett A.; WYAND, Jeffrey A.; KORNICZKY, Paul J.; RUSCHAU, Pamela J.; PETERSEN, Steven P.; AUGUSTYN, John M.; GRIFFITH, Christopher T.; MUELLER, Wesley O.; JAY, Jeremy M.; BURGAN, Jeffrey B.; THOMPSON, Eley O.; JOY, Mark; HOOVER, Allen E.; AIRAN, David M.; PILLAI, Xavier; CHANG, Y. Kurt; BAYS, Gregory C.; LARCHER, Carol; MILLER, Thomas A.; SKLAR, Steven H.; HUNT, Gregory A.; HEFNER, M. Daniel; MATTHIAS, Brent E.; JEWIK, Patrick R.; BELUSH, Thomas A.; JAROSIK, Gary R.; OSTROFF, Joseph S.; MAKEEVER, Jeffery J.; HASAN, Salim A.; SCHODIN, David J.; AHERN, Paul L.; ANDERSON, Theodore W.; SMITH, Noel I., all of

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to represent the undersigned before ☒ all the competent International Authorities  
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☐ the International Preliminary Examining Authority only

in connection with any and all international applications filed with the following Office, United States Patent and Trademark Office, as receiving Office and to make or receive payment on behalf of the undersigned.

**Signature of the applicant(s)** (where there are several applicants, each of them must sign; next to each signature, indicate the name of the person signing and the capacity in which the person signs, if such capacity is not obvious from reading this power):



Thomas W. Huckaby  
Assistant Secretary  
Representative of the Applicant

Date: July 16, 1999



PCT

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SAVICKI, Alan F., Sr.  
577 Beaconsfield Avenue  
Naperville, Illinois 60565  
US

hereby appoints (appoint) the following person as: ☒ agent ☐ common representative

Name and address

(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

SHEPPARD, Berton Scott; MUSKAL, James B.; SCHLEMMER, Dennis R.; COONS, Gordon R.; ROSENQUIST, John E.; KOZAK, John W.; OSLAKOVIC, Charles S.; PHELPS, Mark E.; HARTMANN, H. Michael; GAGALA, Bruce M.; MOTTIER, Charles H.; KILYK, John, Jr.; GREEN, Robert F.; CONKLIN, John B.; ZALEWA, James D.; BELZ, John M.; HESTERBERG, Brett A.; WYAND, Jeffrey A.; KORNICZKY, Paul J.; RUSCHAU, Pamela J.; PETERSEN, Steven P.; AUGUSTYN, John M.; GRIFFITH, Christopher T.; MUELLER, Wesley O.; JAY, Jeremy M.; BURGAN, Jeffrey B.; THOMPSON, Eley O.; JOY, Mark; HOOVER, Allen E.; AIRAN, David M.; PILLAI, Xavier; CHANG, Y. Kurt; BAYS, Gregory C.; LARCHER, Carol; SKLAR, Steven H.; HEFNER, M. Daniel; BELUSH, Thomas A.; SPINA, Kenneth P.; GUTMAN, Siegmund Y.; HEINISCH, Andrew J.; MAKEEVER, Jeffery J.; HASAN, Salim A.; WULFF, Richard A.; PIPPENGER, Phillip M.; LYNCH, Jamison E.; VASILJEVIC, Vladan M.; NATH, Rattan; GOULD, Robert M.; SMITH, Len S.; WINGATE, Kevin L.; SCHODIN, David J.; KISSLING, Heather R.; AHERN, Paul L.; ANDERSON, Theodore W.; and SMITH, Noel I., all of

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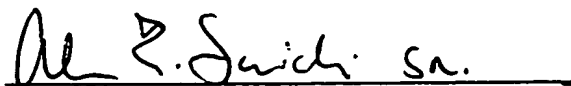
to represent the undersigned before

- ☒ all the competent International Authorities  
☐ the International Searching Authority only  
☐ the International Preliminary Examining Authority only

in connection with any and all international applications filed with the following Office, United States Patent and Trademark Office, as receiving Office and to make or receive payment on behalf of the undersigned.

Signature of the applicant(s)

(where there are several applicants, each of them must sign; next to each signature, indicate the name of the person signing and the capacity in which the person signs, if such capacity is not obvious from reading this power):



Alan F. Savicki, Sr.

Date:

5/18/00

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under Article 19. The Notes are based on the requirements of the Patent Cooperation Treaty and of the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule" and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions, respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

**What parts of the international application may be amended ?**

The claims only.

The description and the drawings may only be amended during international preliminary examination under Chapter II.

**When ?** Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

**Where not to file the amendments ?**

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

**How ?** Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

**What documents must/may accompany the amendments ?**

**Letter (Section 205(b)):**

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confounded with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

## NOTES TO FORM PCT/ISA/220 (continued)

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

### "Statement under Article 19(1)" (Rule 47.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

The statement should be brief, it should not exceed 500 words if in English or if translated into English.

It should not be confounded with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It should not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

### In what language ?

The amendments must be made in the language in which the international application is published. The letter and any statement accompanying the amendments must be in the same language as the international application if that language is English or French; otherwise, it must be in English or French, at the choice of the applicant.

### Consequence if a demand for international preliminary examination has already been filed ?

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a) first sentence).

### Consequence with regard to translation of the international application for entry into the national phase ?

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

**WO 01/94227 A1**

WO 01/94227 A1



**Published:**

— with international search report

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

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# CLOSURE DEVICE

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## FIELD OF THE INVENTION

The present invention relates generally to closure devices and, more particularly, to a slider and interlocking fastening strips. The invention is particularly well suited for fastening flexible storage containers, including plastic bags.

## BACKGROUND OF THE INVENTION

The use of closure devices for fastening storage containers, including plastic bags, is generally known. Furthermore, the manufacture of closure devices made of plastic materials is generally known to those skilled in the art, as demonstrated by the numerous patents in this area.

0

A particularly well-known use for closure devices is in connection with flexible storage containers, such as plastic bags. In some instances, the closure device and the associated container are formed from thermoplastic materials, and the closure device and the sidewalls of the container are integrally formed by extrusion as a single piece. Alternatively, the closure device and sidewalls of the container may be formed as separate pieces and then connected by heat sealing or any other suitable connecting process. In either event, such closure devices are particularly useful in providing a closure means for retaining matter within the bag.

Conventional closure devices typically utilize mating fastening strips or closure elements, which are used to selectively seal the bag. In addition, sliders may be provided for use in opening and closing the fastening strips. The sliders may include a separator which extends at least partially between the fastening strips. If the slider is moved in the opening direction, the separator divides or deoccludes the fastening strips and opens the bag. If the slider is moved in the closing direction, the slider closes or occludes the fastening strips.

When the slider is at the closed end of the bag, the separator is still positioned between the fastening strips and, thus, the fastening strips at the closed end of the bag may not be fully occluded. If the fastening strips are not fully occluded the bag may allow air to enter or the bag may allow the contents of the bag to leak from the bag. These situations are not desirable. The present invention provides a solution to this problem.

#### SUMMARY OF THE INVENTION

The closure device includes first and second interlocking fastening strips arranged to be to be interlocked over a predetermined length. The closure device additionally includes a slider which is slidably disposed on the interlocking fastening strips for facilitating the occlusion and deocclusion of the fastening strips when moved towards first and second ends of the fastening strips.

The fastening strips include an upper flange portion that engages a separator on the slider. The flange portion angles inwardly toward the separator. The flange portion is altered at

the closing end of the fastening strips to prevent the slider from opening the fastening strips at the closing end. The flange portion may be altered by flattening the flange portion.

5       The present invention will become more readily apparent upon reading the following detailed description of exemplified embodiments and upon reference to the accompanying drawings herein.

0                   BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a container according to the present invention in the form of a plastic bag;

5       Fig. 2 is a fragmentary side view of the container in Fig. 1;

Fig. 3 is a cross-sectional view taken along line 3-3 in Fig. 2;

0       Fig. 4 is a fragmentary side view of the container in Fig. 1 with the slider in another position;

5       Fig. 5 is a fragmentary top view of the closure device in Fig. 4;

Fig. 6 is a cross-sectional view taken along line 6-6 in Fig. 4;

0       Fig. 7 is a cross-sectional view of another embodiment of the fastening strips;



Fig. 8 is a cross-sectional view of another embodiment of the fastening strips; and

Fig. 9 is a cross-sectional view of another embodiment of the fastening strips.

#### DESCRIPTION OF THE EMBODIMENTS

Figs. 1-3 illustrate an embodiment of a container in the form of a plastic bag 120 having a sealable closure device 121. The bag 120 includes a first sidewall 122 and a second sidewall 123 joined at seams 125, 126 to define a compartment accessible through the open top end but sealable by means of the closure device 121. The closure device 121 includes first and second fastening strips 130, 131 and a slider 132.

The fastening strips 130, 131 and the slider 132 have a longitudinal X axis 102, a transverse Y axis 104 and a vertical Z axis 106. The transverse Y axis 104 is perpendicular to the longitudinal X axis 102. The vertical Z axis 106 is perpendicular to the longitudinal X axis 102 and the vertical Z axis 106 is perpendicular to the transverse Y axis 104.

The fastening strips 130, 131 are adapted to be interlocked between a first end 127 and a second end 128. The fastening strips 130, 131 are secured together at the first and second ends 127, 128 to form end seals. The first and second ends 127, 128 may include melted portions 135, 137, in which the fastening strips 130, 131 are melted together by heat sealing, ultrasonic sealing or other operation to form the end seals. The first and second ends 127, 128 may alternatively be secured together by plastic clamps, or other means.

The slider 132 is mounted onto the fastening strips 130, 131 so that the slider 132 is restrained from being removed from the fastening strips 130, 131 but free to slide along the X axis 102. The slider 132 engages the fastening strips 130, 131 so that when the slider 132 moves in an occlusion direction 114, the fastening strips 130, 131 interlock and the bag 120 is sealed, and when the slider 132 moves in a deocclusion direction 116, the fastening strips 130, 131 separate and the bag 120 is open.

The first fastening strip 130 includes a first closure element 136. The second fastening strip 131 includes a second closure element 134. The first closure element 136 engages the second closure element 134. The first closure element 136 includes a base portion 148 including a pair of spaced-apart, parallelly disposed webs 150, 151 extending from the base portion 148. The base and the webs form a U-channel closure element. The webs 150, 151 include hook closure portions 152, 154 extending from the webs 150, 151 respectively and facing away from each other. The hook closure portions 152, 154 include guide surfaces 145, 155 which generally serve to guide the hook closure portions 152, 154 for occlusion with the hook closure portion 142, 144 of the second closure element 134. The guide surfaces 145, 155 may also have a rounded crown surface. The second closure element 134 includes a base portion 138 having a pair of spaced-apart parallelly disposed webs 140, 141, extending from the base portion 138. The base and the webs form a U-channel closure element. The webs 140, 141 include hook closure portions 142, 144 extending from the webs 140, 141 respectively, and facing towards each other. The hook closure portions 142, 144 include guide surfaces 146, 147 which serve to guide the hook closure portions 142, 144 for occluding with the hook closure portions 152, 154 of the first closure element 136.

The first fastening strip 130 includes an upper flange portion 163. The flange portion 163 extends inwardly from the base portion 148. The flange portion 163 may extend from the base portion 148 or the flange portion 163 may extend from the flange 169. The first fastening strip 130 may include a rib 167 disposed at the lower end of the first fastening strip 130. The second fastening strip 131 includes an upper flange portion 153. The flange portion 153 extends inwardly from the base portion 138. The flange portion 153 may extend from the base portion 138 or the flange portion 153 may extend from the flange 159. The second fastening strip 131 may include a rib 157 disposed at the lower end of the second fastening strip 131.

The slider 132 includes a separator 143 having a first end and a second end wherein the first end may be wider than the second end. In addition, the separator 143 may be triangular in shape. When the slider is moved in the occlusion direction, the separator 143 deoccludes the fastening strips 130, 131, as shown in Fig. 3. The separator 143 engages the flange portions 153, 163 and the flange portions 153, 163 move outward in the Y axis 104. This action causes the closure elements 134, 136 to deocclude. In this embodiment, the upper hook portions 142, 152 and the lower hook portions 144, 154 deocclude.

In accordance with the present invention, and as shown in Figs. 4-6, the flange portions 153, 163 include altered flange portions 172, 174 near the first end 127 for facilitating the closure of the fastening strips at the first end 127. In this embodiment, the altered flange portions 172, 174 are created by flattening the flange portions 153, 163 near the first end 127. When the flange portions are flattened, the plastic may move upward. In another embodiment, the altered flange portions are

created by removing a portion of the flange portion near the first end 127. The altered flange portions 172, 174 prevent the separator 143 from deoccluding the fastening strips near the first end 127. The closure elements 134, 136 remain occluded  
5 when the slider is at the first end 127. Specifically, the upper hook portions 142, 152 and the lower hook portions 144, 154 remain occluded when the slider is at the first end 127. The altered flange portions 172, 174 create a discontinuity in the fastening strips 130, 131, which prevents the separator 143  
0 from deoccluding the closure elements 134, 136 on the fastening strips. The altered flange portions 172, 174 do not allow separator 143 to act upon the flange portions in a manner sufficient to separate the closure elements 134, 136. Thus, the closure elements 134, 136 remain occluded at the first end 127.

5

The altered flange portion or portions may be used on other fastening strips. Figs. 7-9 illustrate interlocking fastening strips of different configurations with a slider.

0 The interlocking fastening strips may comprise "arrowhead-type" or "rib and groove" fastening strips as shown in Fig. 7 and as described in U.S. Patent 3,806,998. The rib element 205 interlocks with the groove element 207. The rib element 205 is of generally arrow-shape in transverse cross section including a  
5 head 210 comprising interlock shoulder hook portions 211 and 212 generally convergently related to provide a cam ridge 213 generally aligned with a stem flange 214 by which the head is connected in spaced relation with respect to the supporting flange portion 208. (U.S. Patent 3,806,998, Col. 2, lines 16-  
0 23). At their surfaces nearest the connecting stem flange 214, the shoulder portions 211 and 212 define reentrant angles therewith providing interlock hooks engageable with interlock hook flanges 215 and 217 respectively of the groove element 207.

(U.S. Patent 3,806,998, Col. 2, lines 23-28). Said hook flanges generally converge toward one another and are spread open to receive the head 210 therebetween when said head is pressed into said groove element 207 until the head is fully received in a groove 218 of said groove element 207 generally complementary to the head and within which the head is interlocked by interengagement of the head shoulder hook portions 211 and 212 and the groove hook flanges 215 and 217. (U.S. Patent 3,806,998, Col. 2, lines 28-36). Through this arrangement, as indicated, the head and groove elements 205 and 207 are adapted to be interlockingly engaged by being pressed together and to be separated when forcibly pulled apart, as by means of a generally U-shaped slider 219. (U.S. Patent 3,806,998, Col. 2, lines 36-41).

5

The slider 219 includes a flat back plate 220 adapted to run along free edges 221 on the upper ends of the sections of the flange portions 208 and 209 as shown in the drawing. (U.S. Patent 3,806,998, Col. 2, lines 41-46). Integrally formed with the back plate 220 and extending in the same direction (downwardly as shown) therefrom are respective coextensive side walls 222 with an intermediate spreader finger 223 extending in the same direction as the side walls at one end of the slider. (U.S. Patent 3,806,998, Col. 2, lines 46-51). The side walls 222 are in the form of panels which are laterally divergent from a narrower end of the slider. (U.S. Patent 3,806,998, Col. 2, lines 51-55). The slider walls 222 are each provided with an inwardly projecting shoulder structure 224 flange adapted to engage respective shoulder ribs 225 and 227 on respectively outer sides of the lower section of the flange portions 208 and 209. (U.S. Patent 3,806,998, Col. 2, line 66 to Co. 3, line 3).

0

In accordance with the invention, the fastening strips may include flange(s) as noted above and the flange(s) are shown altered in Fig. 7.

5        Additionally, the interlocking fastening strips may comprise "profile" fastening strips, as shown in Fig. 8 and described in U.S. Patent 5,664,299. As shown in FIG. 8, the first profile 316 has at least an uppermost closure element 316a and a bottommost closure element 316b. (U.S. Patent 5,664,299, Col. 3, lines 25-  
0 27). The closure elements 316a and 316b project laterally from the inner surface of strip 314. (U.S. Patent 5,664,299, Col. 3, lines 27-28). Likewise, the second profile 317 has at least an uppermost closure element 317a and a bottommost closure element 317b. (U.S. Patent 5,664,299, Col. 3, lines 28-30). The closure  
5 elements 317a and 317b project laterally from the inner surface of strip 315. (U.S. Patent 5,664,299, Col. 3, lines 30-32). When the bag is closed, the closure elements of profile 316 interlock with the corresponding closure elements of profile 317. (U.S. Patent 5,664,299, Col. 3, lines 32-34). As shown in FIG.  
0 8, closure elements 316a, 316b, 317a and 317b have hooks on the ends of the closure elements, so that the profiles remain interlocked when the bag is closed, thereby forming a seal. (U.S. Patent 5,664,299, Col. 3, lines 34-37).

5        The straddling slider 310 comprises an inverted U-shaped member having a top 320 for moving along the top edges of the strips 314 and 315. (U.S. Patent 5,664,299, Col. 4, lines 1-3). The slider 310 has side walls 321 and 322 depending from the top 320. (U.S. Patent 5,664,299, Col. 4, lines 3-4). A separating  
0 leg 323 depends from the top 320 between the side walls 321 and 322 and is located between the uppermost closure elements 316a and 317a of profiles 316 and 317. (U.S. Patent 5,664,299, Col.

4, lines 26-30). The fastening assembly includes ridges 325 on the outer surfaces of the fastening strips 314 and 315, and shoulders 321b and 322b on the side walls of the slider. (U.S. Patent 5,664,299, Col. 4, lines 62-65). The shoulders act as means for maintaining the slider in straddling relation with the fastening strips by grasping the lower surfaces of the ridges 325. (U.S. Patent 5,664,299, Col. 5, lines 4-7).

In accordance with the invention, the fastening strips may include flange(s) as noted above and the flange(s) are shown altered in Fig. 8.

Also, the interlocking fastening strips may be "rolling action" fastening strips as shown in Fig. 9 and described in U.S. Patent 5,007,143. The strips 414 and 415 include profiled tracks 418 and 419 extending along the length thereof parallel to the rib and groove elements 416 and 417 and the rib and groove elements 416, 417 have complimentary cross-sectional shapes such that they are closed by pressing the bottom of the elements together first and then rolling the elements to a closed position toward the top thereof. (U.S. Patent 5,007,143, Col. 4, line 62 to Col. 5, line 1). The rib element 416 is hook shaped and projects from the inner face of strip 414. (U.S. Patent 5,007,143, Col. 5, lines 1-3). The groove element 417 includes a lower hook-shaped projection 417a and a relatively straight projection 417b which extend from the inner face of strip 415. (U.S. Patent 5,007,143, Col. 5, lines 3-6). The profiled tracks 418 and 419 are inclined inwardly toward each other from their respective strips 414 and 415. (U.S. Patent 5,007,143, Col. 5, lines 6-8).

The straddling slider 410 comprises an inverted U-shaped plastic member having a back 420 for moving along the top edges

of the tracks 418 and 419 with side walls 421 and 422 depending therefrom for cooperating with the tracks and extending from an opening end of the slider to a closing end. (U.S. Patent 5,007,143, Col. 5, lines 26-31). A separator finger 423 depends  
5 from the back 420 between the side walls 421 and 422 and is inserted between the inclined tracks 418 and 419. (U.S. Patent 5,007,143, Col. 5, lines 34-36). The slider 410 has shoulders 421a and 422a projecting inwardly from the depending side walls 421 and 422 which are shaped throughout the length thereof for  
0 cooperation with the depending separator finger 423 in creating the rolling action in opening and closing the reclosable interlocking rib and groove profile elements 416 and 417. (U.S. Patent 5,007,143, Col. 5, lines 43-49).

5 In accordance with the invention, track 418 and/or track 419 would be altered near the closing end of the fastening strips.

Although several interlocking fastening strip embodiments have been specifically described and illustrated herein, it will  
0 be readily appreciated by those skilled in the art that other kinds, types, or forms of fastening strips may be used without departing from the scope or spirit of the present invention.

The interlocking fastening strips may be manufactured by  
5 extrusion through a die. The interlocking fastening strips may be formed from any suitable thermoplastic material including, for example, polyethylene, polypropylene, nylon, or the like, or from a combination thereof. Thus, resins or mixtures of resins such as high density polyethylene, medium density polyethylene,  
0 and low density polyethylene may be employed to prepare the interlocking fastening strips. For example, the fastening strips may be made from low density polyethylene.



When the fastening strips are used in a sealable bag, the fastening strips and the films that form the body of the bag may be manufactured from heat sealable material. In this way, the bag may be economically formed by using an aforementioned thermoplastic material and by heat sealing the fastening strips to the bag. For example, the bag may be made from a mixture of high pressure, low density polyethylene and linear, low density polyethylene.

0 The fastening strips may be manufactured by extrusion or other known methods. For example, the closure device may be manufactured as individual fastening strips for later attachment to the bag or may be manufactured integrally with the bag.

5 The alteration of the upper flange portions may be formed using rollers which flatten the material.

The fastening strips can be manufactured in a variety of forms to suit the intended use. The fastening strips may be integrally formed on the opposing sidewalls of the container or bag, or connected to the container by the use of any of many known methods. For example, a thermoelectric device may be applied to a film in contact with the flange portion of the fastening strips or the thermoelectric device may be applied to a film in contact with the base portion of fastening strips having no flange portion, to cause a transfer of heat through the film to produce melting at the interface of the film and a flange portion or base portion of the fastening strips. Suitable thermoelectric devices include heated rotary discs, traveling heater bands, resistance-heated slide wires, and the like. The connection between the film and the fastening strips may also be established by the use of hot melt adhesives, hot jets of air to the interface, ultrasonic heating, or other

known methods. The bonding of the fastening strips to the film stock may be carried out either before or after the film is U-folded to form the bag. In any event, such bonding is done prior to side sealing the bag at the edges by conventional thermal cutting. In addition, the first and second fastening strips may be positioned on opposite sides of the film. Such an embodiment would be suited for wrapping an object or a collection of objects such as wires. The first and second fastening strips may be positioned on the film in a generally parallel relationship with respect to each other, although this will depend on the intended use.

The slider may be multiple parts and snapped together. In addition, the slider may be made from multiple parts and fused or welded together. The slider may also be a one piece construction. The slider can be colored, opaque, translucent or transparent. The slider may be injection molded or made by any other method. The slider may be molded from any suitable plastic material, such as, nylon, polypropylene, polystyrene, acetal, toughened acetal, polyketone, polybutylene terephthalate, high density polyethylene, polycarbonate or ABS (acrylonitrile-butadiene-styrene).

From the foregoing it will be understood that modifications and variations may be effectuated to the disclosed structures - particularly in light of the foregoing teachings - without departing from the scope or spirit of the present invention. As such, no limitation with respect to the specific embodiments described and illustrated herein is intended or should be inferred. In addition, all references and copending applications cited herein are hereby incorporated by reference in their entireties.

WHAT IS CLAIMED IS:

5        1. A closure device, comprising:

         first and second interlocking fastening strips arranged to  
be interlocked over a predetermined X axis between first and  
second ends, the fastening strips being secured together at the  
0 first and second ends;

         a slider slidably disposed on the fastening strips for  
movement between the first and second ends, the slider  
facilitating occlusion of the fastening strips when moved  
towards the first end, the slider including a separator for  
5 facilitating the deocclusion of the fastening strips when the  
slider is moved towards the second end; and

         the first fastening strip includes a first flange portion  
which extends inward toward the second fastening strip, a first  
altered flange portion near the first end of the first fastening  
0 strip.

2.       The invention as in claim 1 wherein the first  
fastening strip includes a first closure element, the first  
flange portion is located above the first closure element.  
5

3.       The invention as in claim 1 wherein the separator  
engages the first flange portion.

4.       The invention as in claim 3 wherein the separator  
engages the first flange portion to facilitate deocclusion of  
0 the fastening strips.

5. The invention as in claim 1 wherein the first altered flange portion is formed by flattening the material of the first flange portion.

5 6. The invention as in claim 5 wherein the first altered flange portion extends upward after flattening the material of the first flange portion.

7. The invention as claim 1 wherein the first altered  
0 flange portion is formed by removing the material of the first flange portion.

8. The invention as in claim 2 wherein the first flange portion is formed separately from the first closure element, the  
5 first flange portion is then joined to the first closure element.

9. The invention as in claim 1 wherein the second fastening strip includes a second flange portion which extends  
0 inward toward the second fastening strip, a second altered flange portion near the first end of the fastening strips.

10. The invention as in claim 9 wherein the first altered flange portion is formed by flattening the material of the first  
5 flange portion, the second altered flange portion is formed by flattening the material of the second flange portion.

11. The invention as in claim 9 wherein the first fastening strip includes a first closure element, the first  
0 closure element is a U-channel closure element, the second fastening strip includes a second closure element, the second closure element is a U-channel closure element.

12. The invention as in claim 1 wherein the fastening strips are U-channel fastening strips.

13. The invention as in claim 1 wherein the fastening  
5 strips are arrowhead type fastening strips.

14. The invention as in claim 1 wherein the fastening strips are profile type fastening strips.

0 15. The invention as in claim 1 wherein the fastening strips are rolling action type fastening strips.

16. A container comprising:  
first and second sidewalls to form a compartment with an  
5 opening;  
first and second interlocking fastening strips respectively connected to the first and second sidewalls at the opening, the fastening strips being arranged to be interlocked over a predetermined X axis between the first and second ends, the  
0 fastening strips being secured together at the first and second ends;

a slider slidably disposed on the fastening strips for movement between the first and second ends, the slider facilitating occlusion of the fastening strips when moved  
5 towards the first end, the slider including a separator for facilitating the deocclusion of the fastening strips when moved towards the second end; and

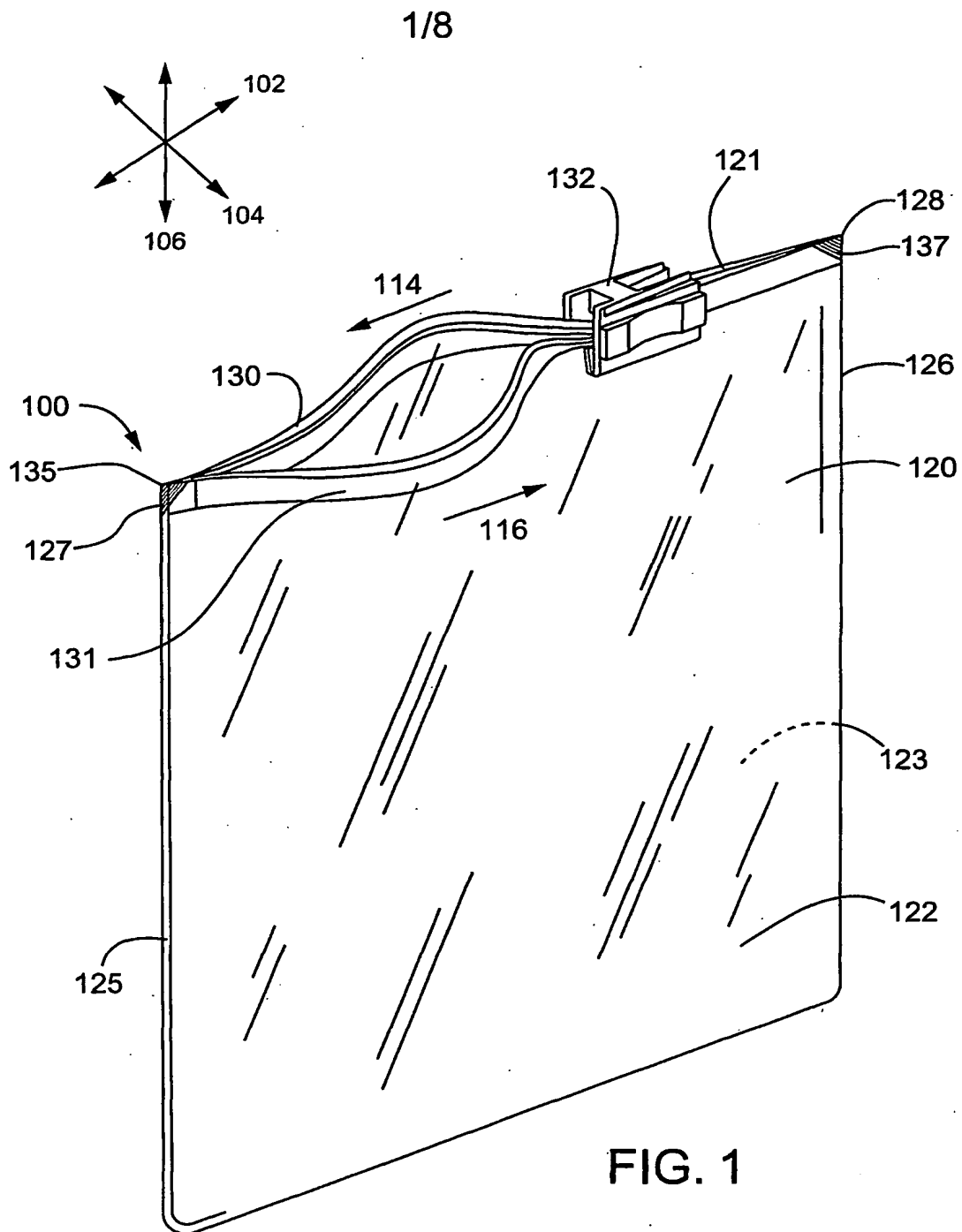
the first fastening strip includes a first flange portion which extends inward toward the second fastening strip, a first  
0 altered flange portion near the first end of the first fastening strip.

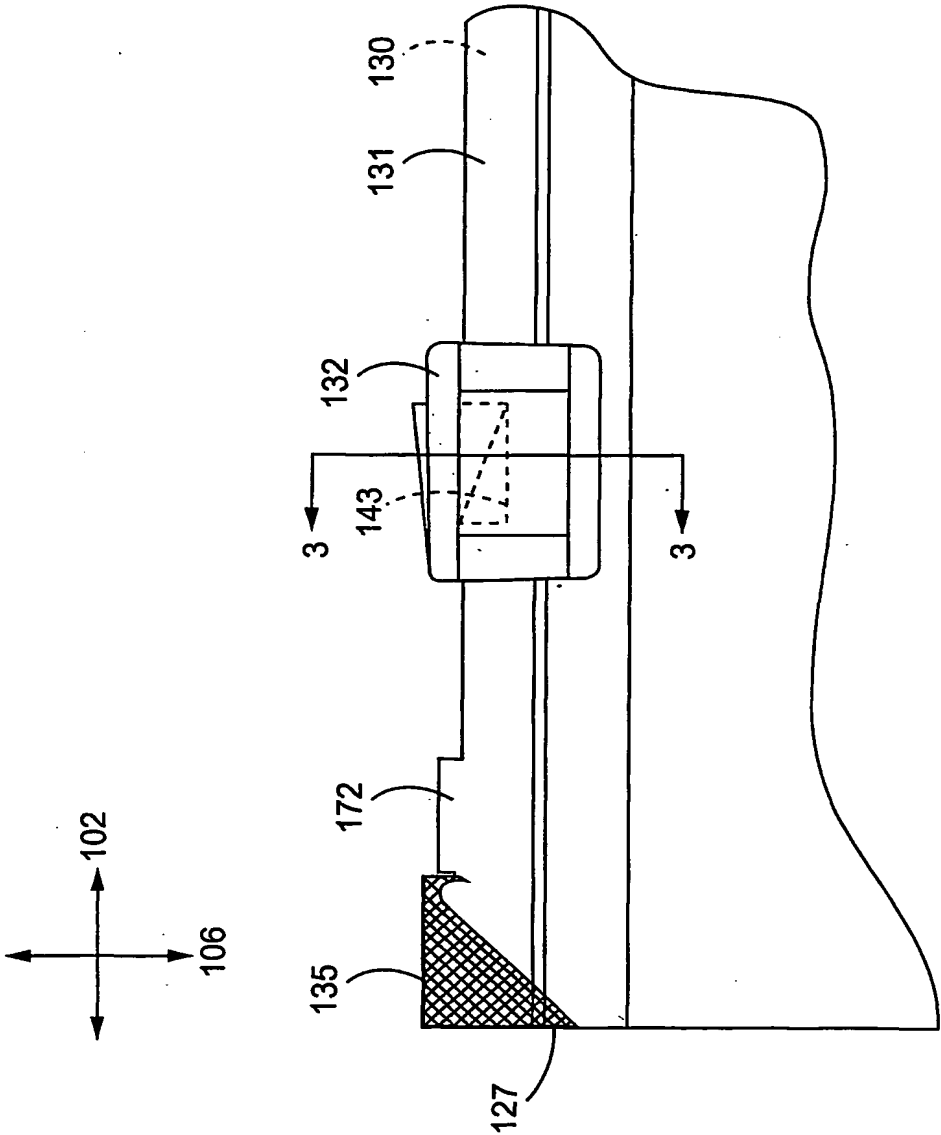
17. A method of manufacturing a closure device,  
comprising:

providing first and second interlocking fastening strips  
arranged to be interlocked over a predetermined X axis between  
5 first and second ends, the fastening strips being secured  
together at the first and second ends;

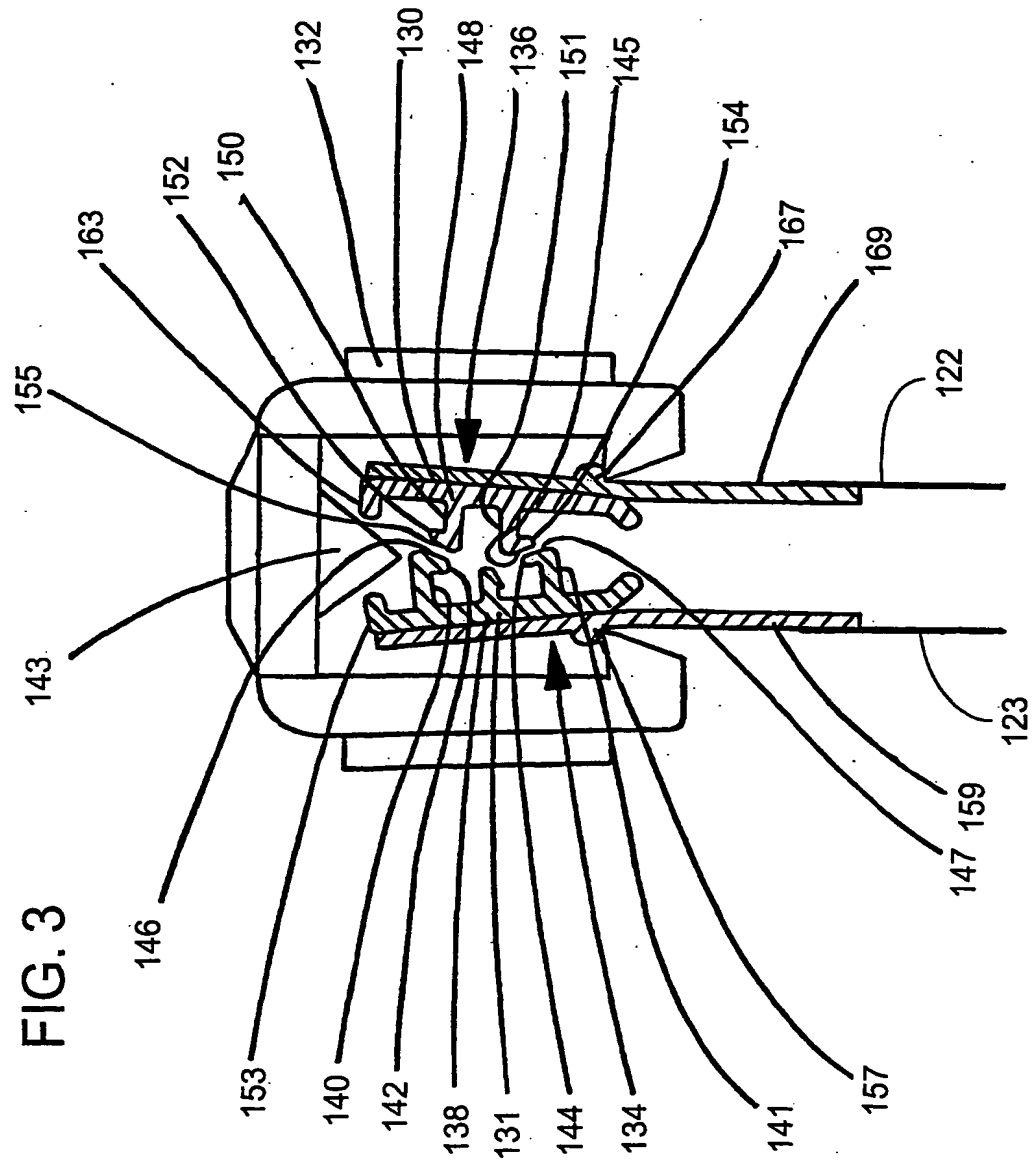
providing a slider slidably disposed on the fastening strips  
for movement between the first and second ends, the slider  
facilitating occlusion of the fastening strips when moved  
0 towards the first end, the slider including a separator for  
facilitating the deocclusion of the fastening strips when the  
slider is moved towards the second end; and

providing the first fastening strip includes a first flange  
portion which extends inward toward the second fastening strip,  
5 a first altered flange portion near the first end of the first  
fastening strip.

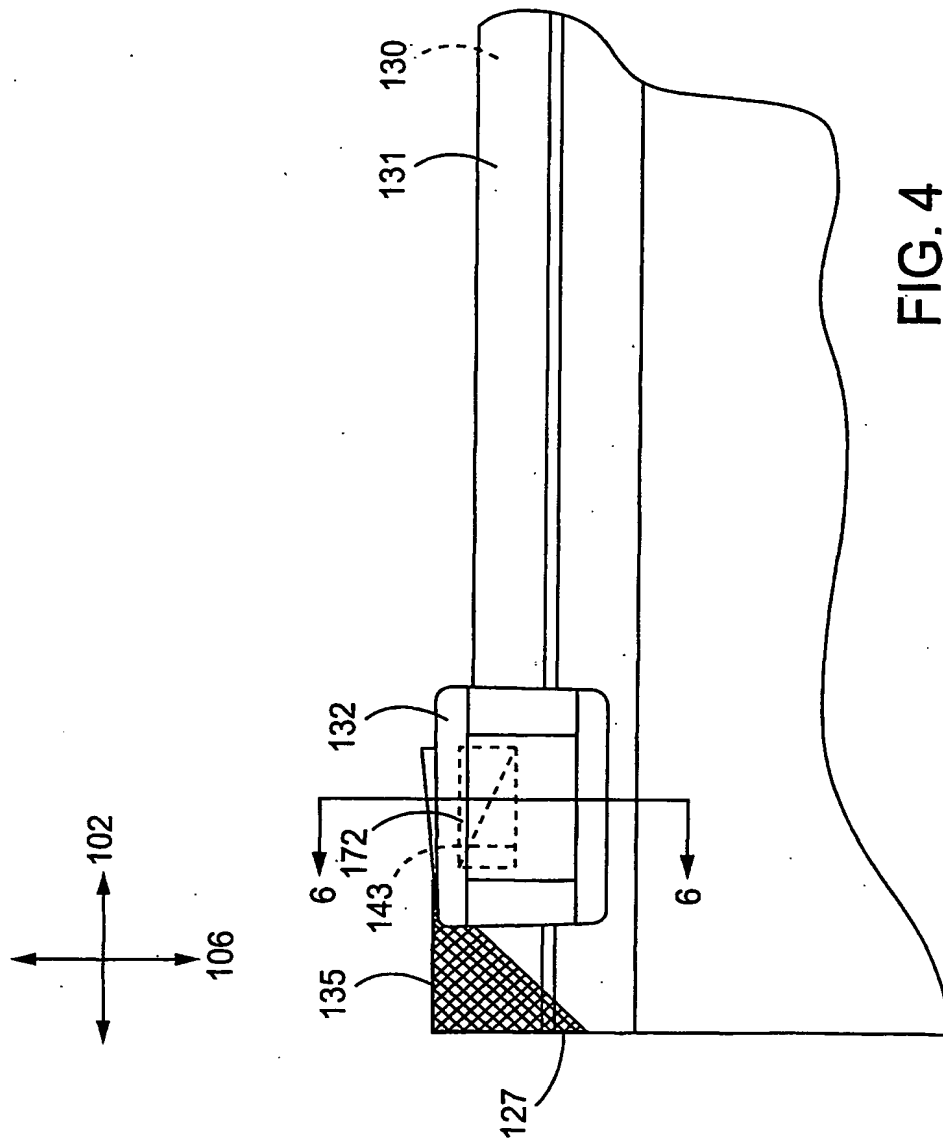




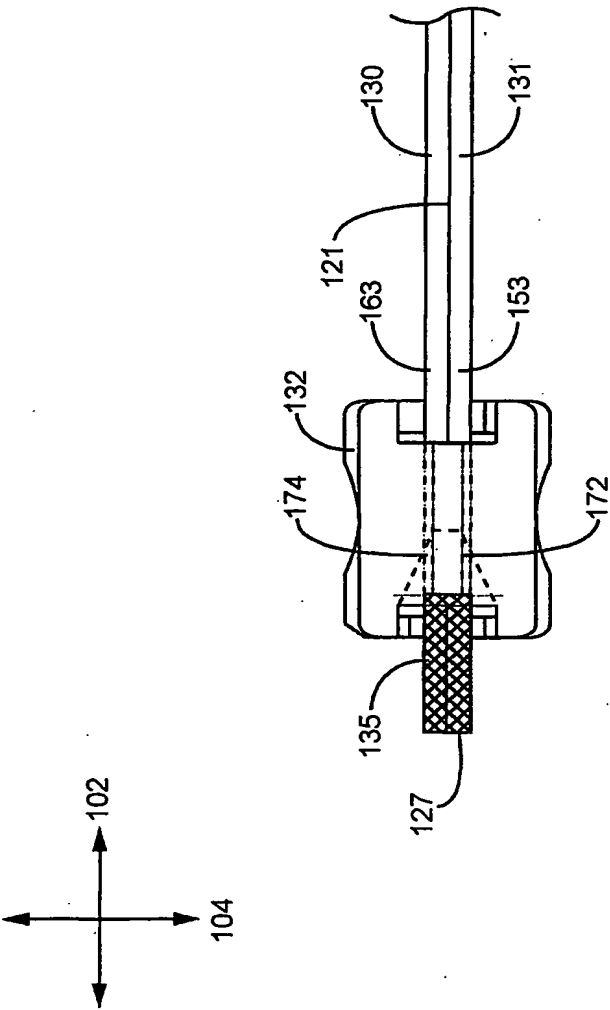




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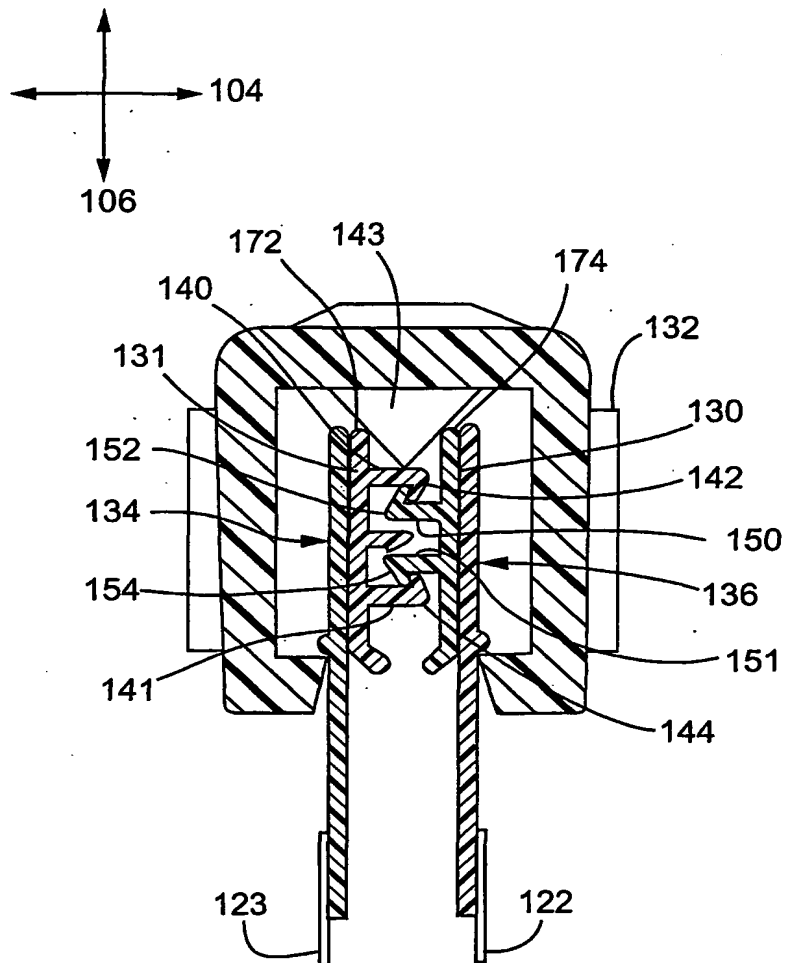


FIG. 6

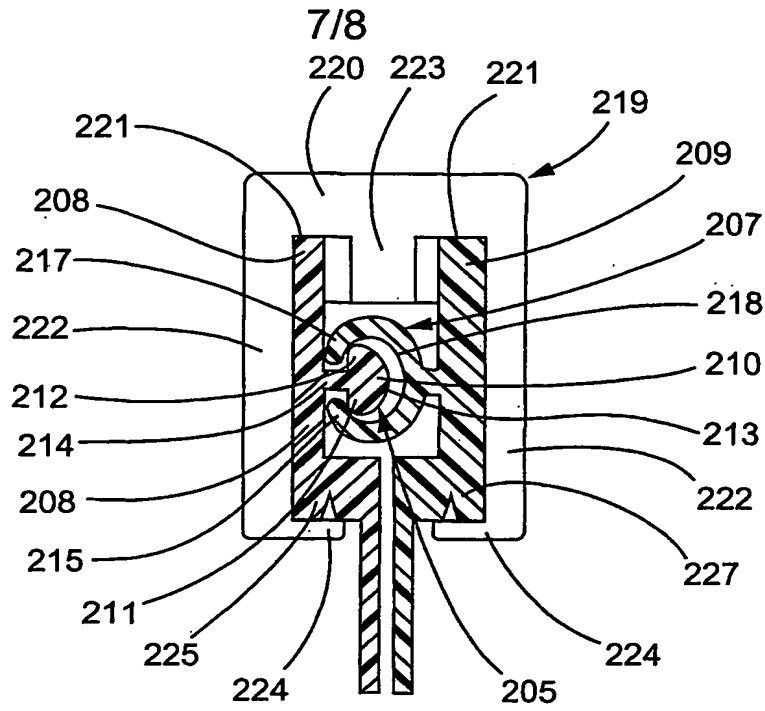


FIG. 7

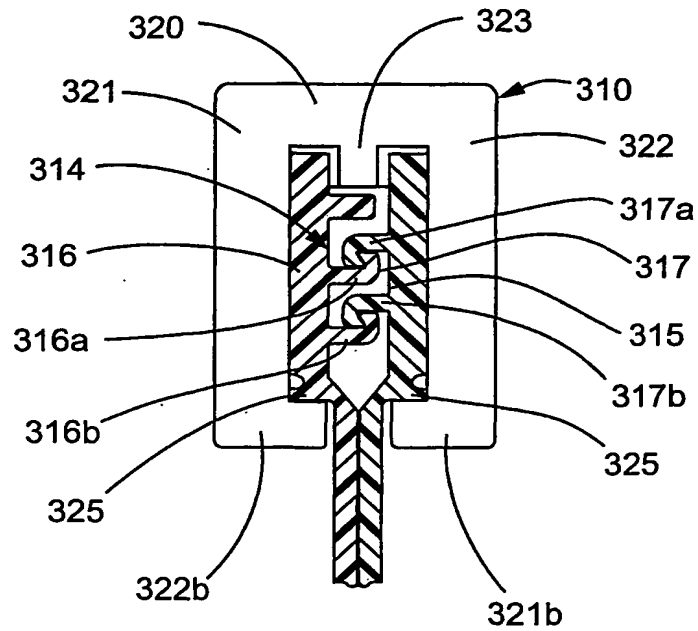


FIG. 8



FIG. 9

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/40117

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : B65D 33/24

US CL : 24/30.5R

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 24/30.5R, 399, 400, 587, 575-577; 383/64, 69

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,871,281 A (STOLMEIER et al) 16 February 1999 (16.02.1999), see figures 3-7.	1-10,13,14,16
Y		11,12,15
Y	US 5,664,299 A (PORCHIA et al) 09 September 1997 (09.09.1997), see figures 2 and 3.	11,12
Y	US 5,007,143 A (HERRINGTON) 16 April 1991 (16.04.1991), see figures 4-7.	15
A	US 5,833,791 A (BRYNIARSKI et al) 10 November 1998 (10.11.1998), see figures 1a and 1b.	1
A	US 5,301,395 A (RICHARDSON et al) 12 April 1994 (12.04.1994), see figure 3.	1
A	US 5,067,208 (HERRINGTON, JR. et al) 26 November 1991 (26.11.1991), see figure 11.	1

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:

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document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

28 August 2000 (28.08.2000)

Date of mailing of the international search report

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